

# Mini Tabletop 8mm Cartridge Tape Subsystem

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## Product Specification

## Copyright

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## Revision History

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Revision	Date
000	September 1992 (beta draft)
001	October 1992 Initial release

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520154-001

## FCC Notice

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This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Shielded cables are required for this device to comply with FCC Rules. **Use shielded cables when connecting this device to others.**

**Bescheinigung des Herstellers/Importeurs:** Hiermit wird bescheinigt, daß das Mini Tabletop CTS in Übereinstimmung mit den Bestimmungen der Vfg 1046/1984 funkentstört ist. Der Deutschen Bundespost wurde das Inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt. Die Einhaltung der betreffenden Bestimmungen hängt von der Verwendung abgeschirmter Kabel ab. Für die Beschaffung entsprechender Kabel ist der Betreiber verantwortlich.

Dieses Gerät wurde sowohl einzeln als auch in einer Anlage, die einen normalen Anwendungsfall nachbildet, auf die Einhaltung der Funkentstörbestimmungen geprüft. Es ist jedoch möglich, daß die Funkentstörbestimmungen unter ungünstigen Umständen bei anderen Gerätekombinationen nicht eingehalten werden. Der Betreiber ist für die Einhaltung der Funkentstörbestimmungen seiner eigenen Anlage verantwortlich, in der dieses Gerät betrieben wird.

English Translation:

**Certificate by Manufacturer/Importer:** This is to certify that the Mini Tabletop CTS is shielded against radio interference in accordance with the provisions of Vfg 1046/1984. The German Postal Services have been advised that this device is being put on the market and that they have been given the right to inspect the series for compliance with the regulations. Compliance with applicable regulations depends on the use of shielded cables. It is the user who is responsible for procuring the appropriate cables.

This equipment has been tested concerning compliance with the relevant RFI protection requirements both individually and on system level (to simulate normal operation conditions). However, it is possible that these RFI requirements are not met under certain unfavorable conditions in other installations. It is the user who is responsible for compliance of his particular installation.

## CSA Notice

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Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de Classe B prescrites dans le reglement sur le brouillage radioelectrique edicte par le Ministere des Communications du Canada.

English translation:

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.

## Product Warranty Caution

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The Mini Tabletop Cartridge Tape Subsystem (Mini Tabletop CTS) is warranted to be free from defects in materials, parts, and workmanship and will conform to the current product specification upon delivery. **For the specific details of your warranty, refer to your sales contract or contact the company from which the Mini Tabletop CTS was purchased.**

The warranty for the Mini Tabletop CTS shall not apply to failures caused by:

- Physical abuse or use not consistent with the operating instructions or product specifications provided by EXABYTE's personnel or agent for the applicable equipment.
- Modifications by other than EXABYTE's personnel or agent in any way other than those approved by EXABYTE, provided the warranty shall not be voided by the repair or replacement of parts or the attachment of items in the manner described in maintenance or installation instructions provided by EXABYTE.
- Repair by other than EXABYTE's personnel or agent in a manner contrary to the maintenance instructions provided by EXABYTE.
- Removal of the EXABYTE serial number tag.
- Physical abuse due to improper packaging of returns.

### CAUTION

Returning the Mini Tabletop CTS in unauthorized packaging may damage the unit and void the warranty.

If you are returning the Mini Tabletop CTS for repair, package it in its original packaging (or in replacement packaging obtained from your vendor).

If problems with the Mini Tabletop CTS occur, contact your maintenance organization; do not void the product warranty by allowing untrained or unauthorized personnel to attempt repairs.

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# 1

## About This Specification

This product specification describes the features, characteristics, performance, safety and regulatory compliance, shipping and installation procedures, and maintenance procedures for the EXABYTE® Mini Tabletop 8mm Cartridge Tape Subsystem (Mini Tabletop CTS).

This chapter describes the following:

- Purpose of this specification and contents of each chapter
- Conventions used in this specification, such as warnings and cautions
- Related publications
- International standards that this product meets

## Purpose

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Engineering, purchasing, or marketing personnel can use this specification to evaluate the Mini Tabletop 8mm Cartridge Tape Subsystem (CTS) and its integration into their product line.

## Organization of This Specification

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This specification contains the following chapters:

- Chapter 2 describes the features, physical characteristics, product configuration, and related products of the Mini Tabletop CTS. It also contains information about integrating the Mini Tabletop CTS into the SCSI bus.
- Chapter 3 describes the functional performance of the Mini Tabletop CTS, including its power, environmental, reliability, and interface specifications.
- Chapter 4 describes the Mini Tabletop CTS's compliance with regulatory and safety agency standards, including electromagnetic compatibility (EMC), susceptibility to electrostatic discharge (ESD), and susceptibility to radiated interference (electromagnetic interference (EMI) and radio frequency interference (RFI)).
- Chapter 5 provides general information about shipping and installing the Mini Tabletop CTS.
- Chapter 6 gives a brief overview of the maintenance procedures for the Mini Tabletop CTS.
- A glossary, index, and reader's comment form are included at the back of this specification.

## Conventions Used in this Specification

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This specification uses special conventions to highlight notes, important information, cautions, and warnings. Figure 1-1 shows the format and definitions of this text. Take special note of boxed text. Failure to follow cautions and warnings can result in equipment damage or personal injury!

**Note:** Read *Notes* for hints or suggestions about the topic or procedure being discussed.

### **Important**

Read the information in *Important* boxes to learn convenient methods of following the procedure discussed in the text. Important messages help you to successfully complete steps or avoid additional steps in a procedure.

### **CAUTION**

Read the information in *Caution* boxes to avoid damaging equipment. Caution messages help you to successfully complete a procedure and avoid a potentially damaging event.

### **WARNING**

Read the information in *Warning* boxes to avoid personal injury. Warning messages indicate extremely dangerous conditions and offer additional information about avoiding injury.

**Figure 1-1** Format and definitions of messages used in this specification

## Related Publications

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Refer to the following publications for additional, related information.

### Mini Tabletop Cartridge Tape Subsystem

For more information about installing the Mini Tabletop CTS, refer to the following publication:

- *Mini Tabletop 8mm Cartridge Tape Subsystem Installation*, 520156

### EXB-8205 8mm Cartridge Tape Subsystem

For more information about the EXB-8205, refer to the following publications:

- *EXB-8205 8mm Cartridge Tape Subsystem Product Specification*, 510703
- *EXB-8205 8mm Cartridge Tape Subsystem User's Manual*, 510501

### EXB-8505 8mm Cartridge Tape Subsystem

For more information about the EXB-8505, refer to the following publications:

- *EXB-8505 8mm Cartridge Tape Subsystem Product Specification*, 510504
- *EXB-8505 8mm Cartridge Tape Subsystem User's Manual*, 510503

## Standards

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For more information about the standards used for the Mini Tabletop CTS, refer to the following publications:

- *ANSI Small Computer System Interface (SCSI)*, X3.131-1989
- *ANSI Small Computer System Interface-2 (SCSI)*, X3.131-1990
- *ANSI/ISO/IEC 11319-1992 and ECMA-145, 8mm Wide Magnetic Tape Cartridge for Information Interchange*, July 1992

# 2

## Product Characteristics

This chapter describes the following:

- General features of the Mini Tabletop CTS
- Physical characteristics of the Mini Tabletop CTS
- Options for integrating the Mini Tabletop CTS
- Other products related to the Mini Tabletop CTS

## General Features

The Mini Tabletop CTS, shown in Figure 2-1, is a fully integrated half-high tabletop 8mm cartridge tape subsystem. The EXABYTE design integrates a single half-high EXB-8205 or EXB-8505 CTS into an enclosure containing a thermistor-controlled fan, a power supply, a Small Computer System Interface (SCSI) ID switch, two SCSI connectors, and a Monitor port. The unique design provides temperature control and allows the CTS to stand alone in either a vertical or horizontal position.

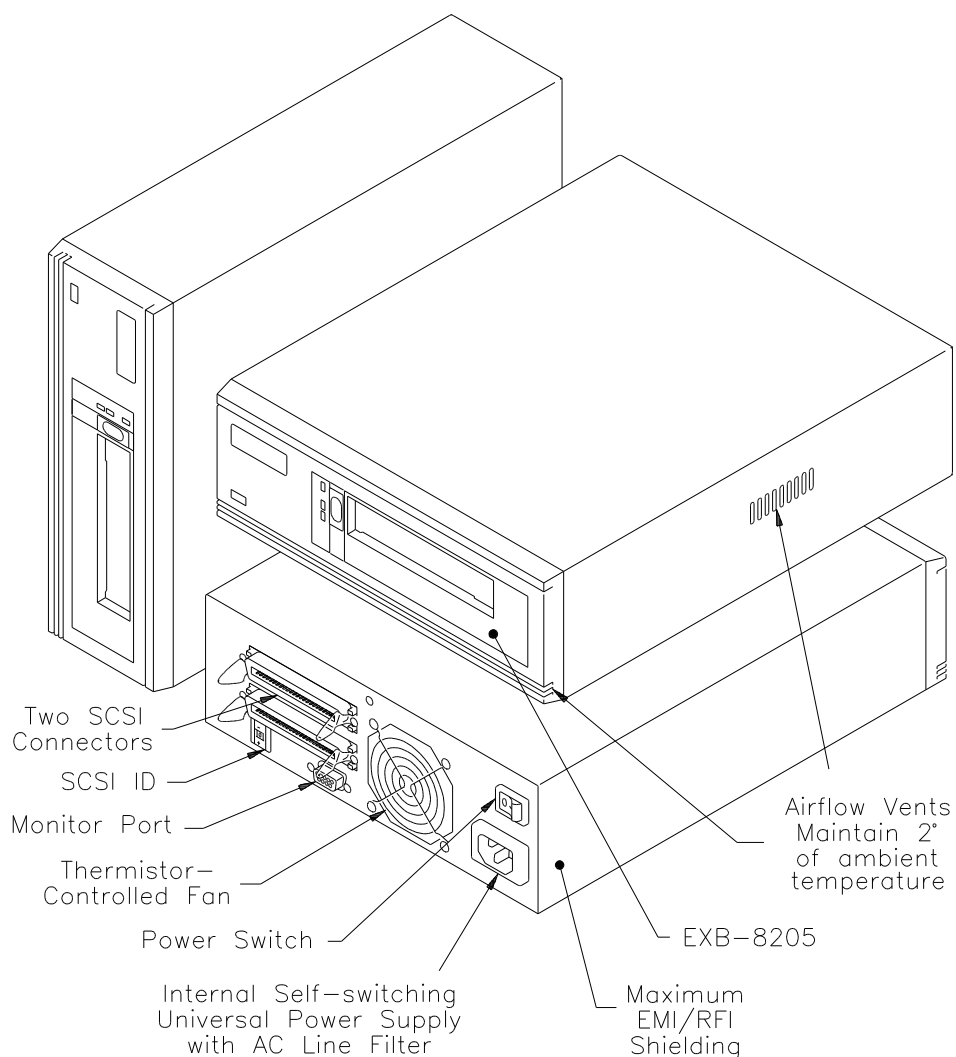


Figure 2-1 Mini Tabletop CTS



The Mini Tabletop CTS offers the following features:

- **Full EXB-8505 or EXB-8205 functionality:** Choose between either an EXB-8205 or EXB-8505 in your Mini Tabletop CTS.
- **EXB-8505 functionality includes:**
  - **4 data formats:** EXB-8500c and EXB-8200c compressed formats and EXB-8500 and EXB-8200 uncompressed formats
  - Intelligent IDRC data compression
  - **5 GBytes** of native storage capacity
  - **Up to 1 MByte/second** sustained data transfer rate (with an average compression ratio of 2:1)
- **EXB-8205 functionality includes:**
  - **2 data formats:** EXB-8200c compressed format and EXB-8200 uncompressed format.
  - Intelligent IDRC data compression
  - **2.5 GBytes** of native storage capacity
  - **Up to 500 KBytes/second** sustained data transfer rate (with an average compression ratio of 2:1)

**Note:** The actual compression ratio achieved depends on the type of data to be compressed. This specification assumes an average compression efficiency of 2:1.

- **Flexibility:** Lightweight, completely enclosed, temperature controlled design allows either vertical or horizontal placement.
- **Advanced interface:** Remote SCSI ID switch and two SCSI connectors provide multiple options in a daisy-chained environment including SCSI 1 and SCSI 2 support.
- **Temperature control:** Variable-speed thermistor-controlled fan with locked rotor protection and polarity protector maintains internal temperature with minimal noise.
- **Power protection:** Internal, self-switching universal power supply allows continuous operation during limited power interruptions or surges. An AC line filter minimizes interference.

- **Ease of use:** An external Monitor port offers quick diagnostics and code updates for the enclosed CTS using the CTS Monitor program.
- **Superior reliability:** Maximum EMI/RFI shielding in a fully enclosed container meets the regulatory and safety agency standards listed in Chapter 4.

## Physical Description

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This section describes the physical features of the Mini Tabletop CTS, including its external features, front panel controls and indicators, back panel components, and internal features.

### External Features

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This section describes the size, weight, color, and logo area of the Mini Tabletop CTS. Figure 2-2 shows the dimensions and logo area of the Mini Tabletop CTS.

#### Size and Weight

The Mini Tabletop CTS is 3 inches high × 9 inches wide × 11 inches deep (76.2 mm × 228.6 mm × 279.4 mm).

Including the integral CTS, the Mini Tabletop CTS weighs 8 pounds (3.6 kilograms).

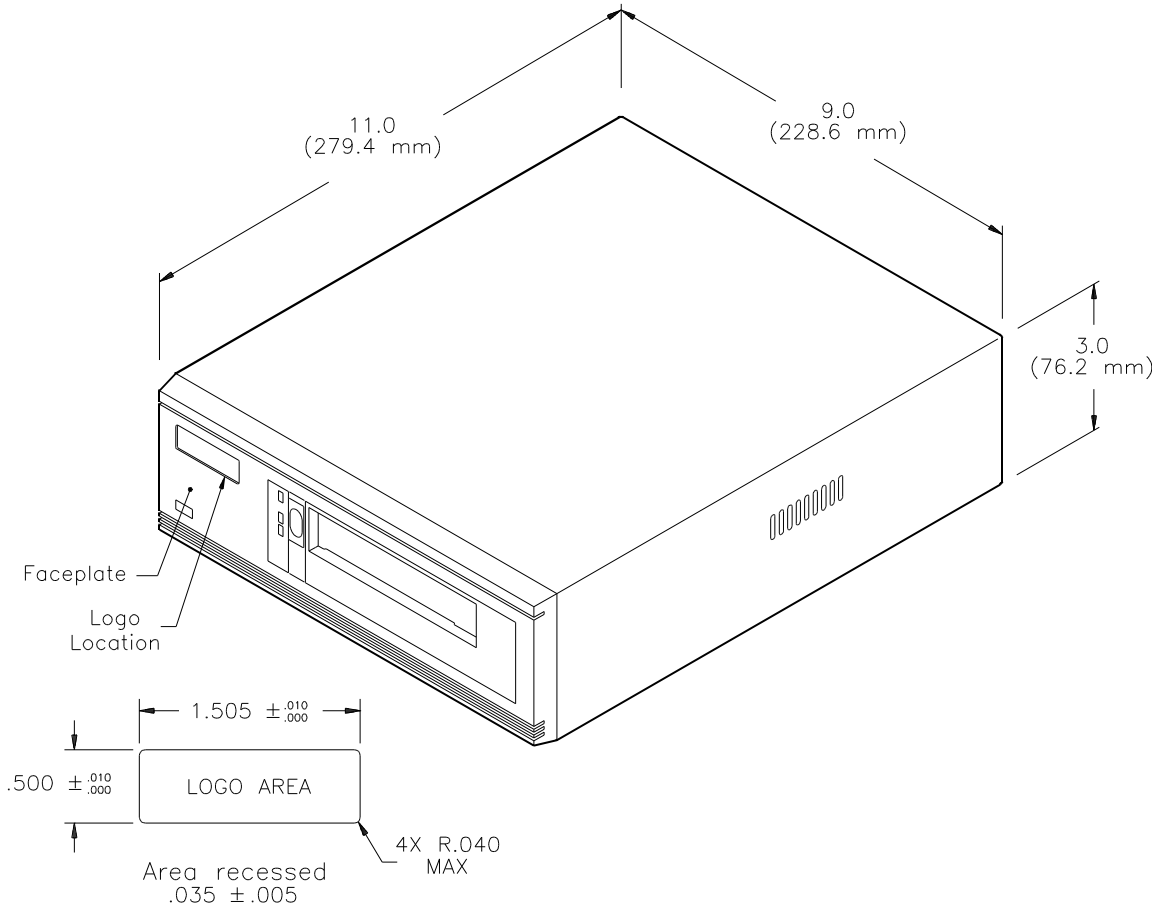


Figure 2-2 Dimensions and logo area of the Mini Tabletop CTS (EXB-8205 shown)

**Logo Area**

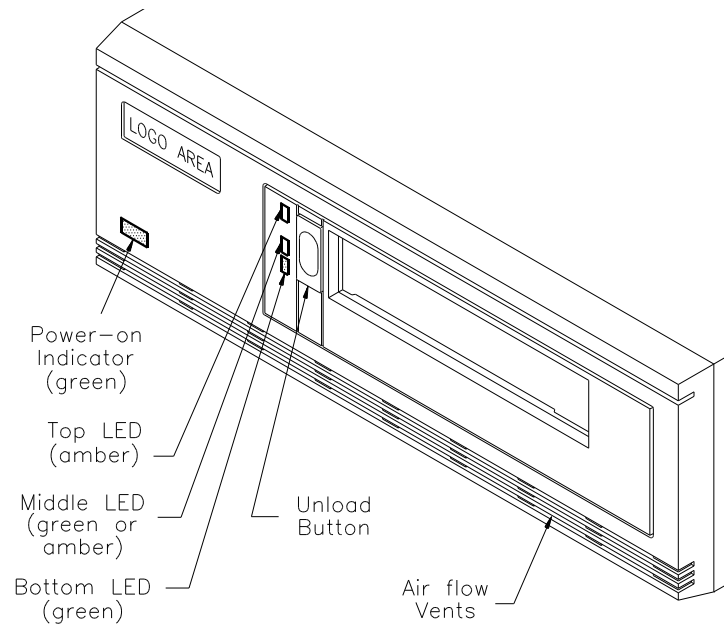
The Mini Tabletop CTS provides a recessed area in the upper left corner of the faceplate for a company logo. The logo area is 1.51 inches wide  $\times$  0.50 inches high (38.23 mm  $\times$  12.70 mm). Figure 2-2 shows the location and dimensions of the logo area. The standard Mini Tabletop CTS does not include a logo label. For custom label information, contact your EXABYTE account manager.

**Color**

The standard Mini Tabletop CTS enclosure, including the faceplate and door of the integral CTS, is pearl white. For custom color information, contact your EXABYTE account manager.

## Front Panel Controls and Indicators

This section describes the controls and indicators on the front panel of the Mini Tabletop CTS. The front panel includes the power-on indicator, three LEDs, and an unload button. Figure 2-3 shows the controls and indicators on the front panel of the Mini Tabletop CTS, with an EXB-8205 installed.



**Figure 2-3** Front panel of the Mini Tabletop CTS (EXB-8205 shown)

### Power-on Indicator

When you turn on power at the rear of the Mini Tabletop CTS, the green power-on LED on the lower left corner of the faceplate lights up. When power is off or disconnected, the LED turns off.

### Unload Button

You can use the unload button to perform the unload sequence. The unload sequence rewinds and ejects the data cartridge.

**LEDs**

The three green and amber LEDs on the front panel indicate the status of the CTS. Table 2-1 shows the LED combinations that may occur during CTS operation. When the Mini Tabletop CTS is powered on it performs a power-on self-test (POST). The table below also indicates the LED combinations indicating a successful or failed POST. On or flashing LEDs indicate errors, SCSI bus activity, format status, and tape motion as follows:

- **Top LED amber:** CTS error
- **Middle LED amber:** SCSI bus activity, compressed tape format
- **Middle LED green:** SCSI bus activity, uncompressed tape format
- **Bottom LED green:** tape motion

**Table 2-1** Combinations of LEDs that may occur during Mini Tabletop CTS operation

	CTS State										
	POST (1st part)	POST (to completion)	Failed POST	Ready no tape	Ready tape	Normal tape motion	High-speed tape motion	SCSI bus reset	Error	Time to clean	Cleaning tape loaded
<b>Top LED (errors)</b>	●	●	* fast	○	○	○	○	●	* slow	* fast	○
<b>Middle LED (SCSI)<sup>a</sup></b>	● (green)	* irregular	* irregular	* irregular	* irregular	* irregular	* irregular	* irregular	* irregular	* irregular	* irregular
<b>Bottom LED (motion)</b>	●	○ <sup>b</sup>	○	○	●	* slow	* fast	●	○	* fast	* slow

<sup>a</sup> Green—uncompressed format tape.  
 Amber—compressed format tape.  
<sup>b</sup> If a data cartridge is loaded, the bottom LED will flash slow and then fast during the second part of the power-on self-test.

**Key for Table 2-1**

●	○	*
The LED is on.	The LED is off.	The LED is flashing:
		* <b>slow</b> = 1 flash/second (0.94 Hz)
		* <b>fast</b> = 4 flashes/second (3.76 Hz)
		* <b>irregular</b> = Rate of flash varies with SCSI bus activity. If the CTS is not connected to the bus, the LED is off.

**Note:** You may occasionally observe other LED combinations and sequences during CTS operation. These other combinations represent special or unusual conditions that are beyond the scope of this table.

## Back Panel Components

This section describes the components on the Mini Tabletop CTS's back panel. The back panel contains the SCSI ID switch, two SCSI connectors, the Monitor port, the fan cover, power switch, power connector, and the labels. Figure 2-4 shows the back panel of a Mini Tabletop CTS.

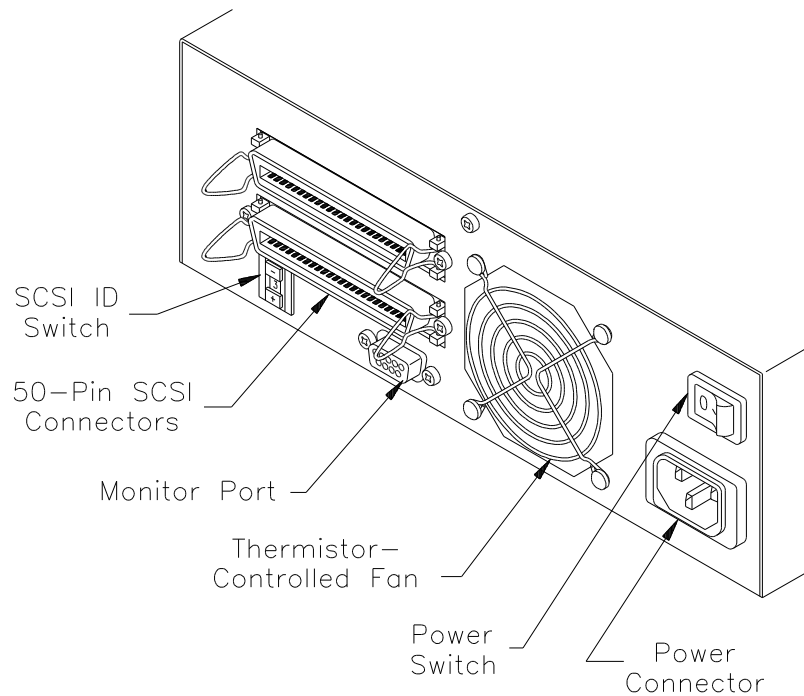


Figure 2-4 Back panel of the Mini Tabletop CTS

### SCSI ID Switch

You can use the SCSI ID switch to change the address of the CTS on the SCSI bus. You can select a SCSI address for the CTS from 0 to 7. The SCSI switch is set to 0 for shipping. The SCSI ID switch is recessed to prevent accidental selection. You must use a pointed object such as a pen to change the setting of the SCSI ID switch.

## SCSI Connectors

You can use the SCSI connectors on the back panel to connect the CTS to a SCSI bus. Use shielded 50-pin male ribbon connectors to connect to the two 50-pin SCSI connectors at the back of the Mini Tabletop CTS. You can connect multiple Mini Tabletop CTSs in a series of daisy-chained configurations. If the Mini Tabletop CTS is the last device on the SCSI bus, you must connect a cable to one connector and an external terminator to the other connector.

## Monitor Port

You can use the Monitor port to change configuration options, download code updates, and perform diagnostic procedures on the enclosed CTS. To use the Monitor port, you need an IBM AT<sup>®</sup>, XT<sup>™</sup>, or compatible system with a serial port, a 9-pin RS-232 serial cable with a male D connector, and the CTS Monitor program.

## Thermistor-Controlled Fan

The thermistor-controlled fan maintains the operating temperature of both the Mini Tabletop CTS and the CTS to within 2° C of the ambient temperature. A thermistor enables the fan to increase or decrease airflow as environmental temperatures change. The unique design of the enclosure provides air circulation throughout the CTS.

The fan also features locked rotor protection. If a foreign object becomes lodged in the fan, the fan motor automatically shuts off. To restart the fan, turn off the power, remove the foreign object, and turn on the power.

## Power Supply, Power Connector, and Power Switch

The Mini Tabletop CTS includes a power supply for the enclosure and the CTS. The universal input power supply accepts 100 to 240 VAC at 50 to 60 Hz. The power supply automatically adjusts to any changes in voltage or frequency within the specified range.

The Mini Tabletop CTS includes a seven-foot (2.1-meter), three-conductor 120 VAC power cord for use in the United States and Canada. The power connector accepts a standard IEC type CEE-22 female connector.

Turn on the power with the rocker switch on the upper right side of the back panel.

## Labels

The Mini Tabletop CTS includes FCC, ESD, and serial number labels. These labels provide component, serial number, part number revision information, and electrical information. Figure 2-5 shows the location of these labels.

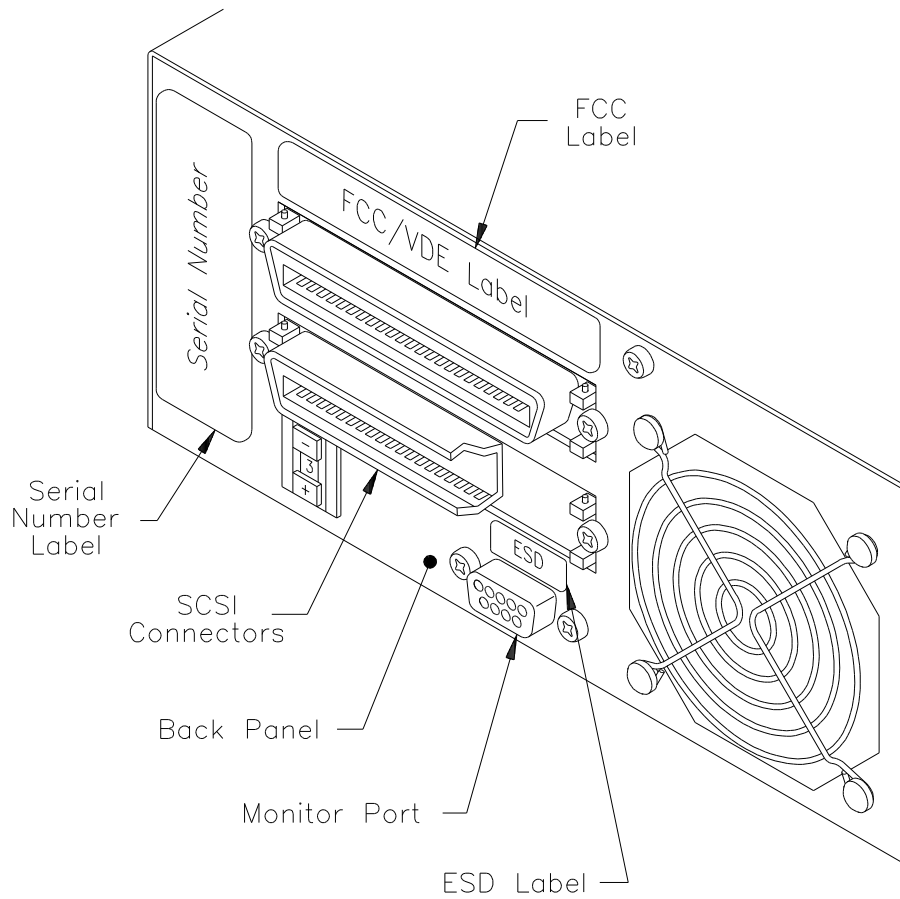


Figure 2-5 Location of the labels on the Mini Tabletop CTS



## Integrating the Mini Tabletop CTS

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You can integrate the Mini Tabletop CTS into a daisy-chained environment using the SCSI connectors at the back of the device. You can place the Mini Tabletop CTS anywhere along the SCSI bus. If the Mini Tabletop CTS is the last device on the SCSI bus, you must connect a cable to one of the SCSI connectors and an external terminator to the other connector. The Mini Tabletop CTS incorporates the following SCSI characteristics:

- 50-pin male ribbon cable connector
- Support for single-ended or differential configurations
- Multiple initiator configuration
- SCSI bus parity monitoring

The Mini Tabletop CTS allows you to integrate one or more CTSs into a variety of locations on the SCSI bus. The advantages of different configurations depend on your processing goals. The figures in this section illustrate some integration possibilities.

**Note:** The figures show typical configurations but do not represent recommendations or limitations. Your devices may vary.

## Single-Host Configuration

This configuration does not terminate at the Mini Tabletop CTS, so it does not require an external terminator on the Mini Tabletop CTS. Termination occurs at the last device on the bus. Figure 2-6 shows a single host configuration using a Mini Tabletop CTS.

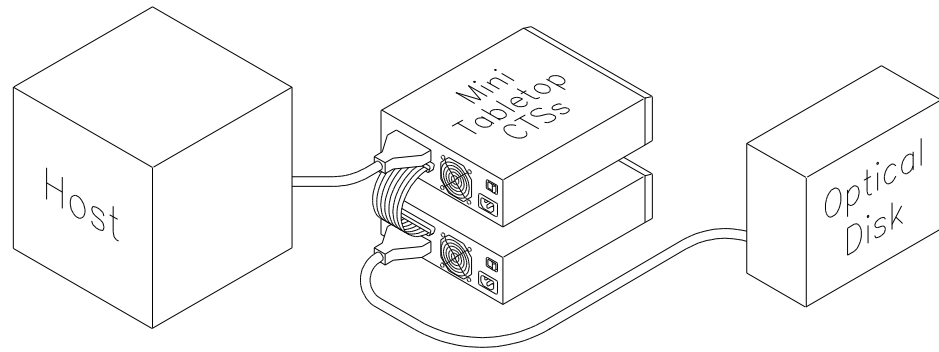


Figure 2-6 Single-host SCSI bus

Some advantages of the Mini Tabletop CTS in this configuration are:

- Host has access to fast backup.
- Multiple connectors allow other devices to hang off bus.
- Command queuing maximizes bus efficiency.
- CTS supports either single-ended or differential configuration.
- Enclosure allows easy placement of CTS anywhere on SCSI bus.
- Backups can be performed in a secured location away from other devices on the bus.

## Multiple-Host Configuration

This configuration does not terminate at the Mini Tabletop CTS, so it does not require external termination on the Mini Tabletop CTS.

Figure 2-7 shows a multiple host configuration using a Mini Tabletop CTS.

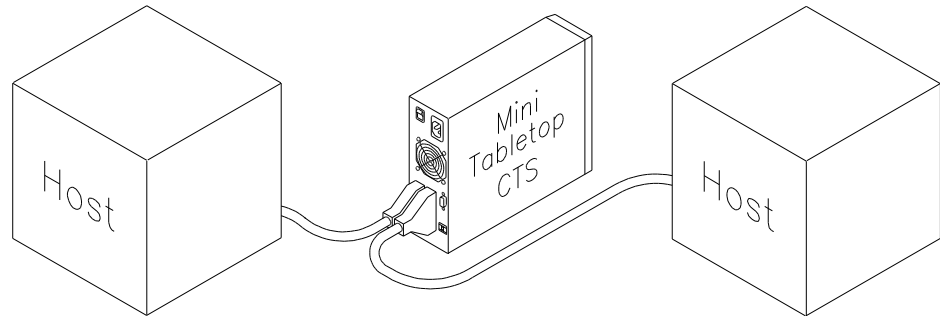


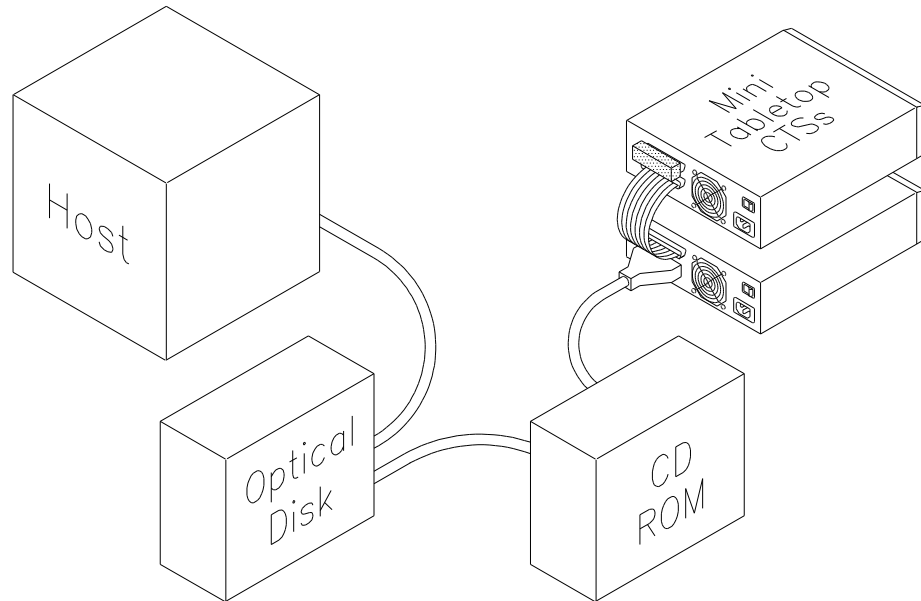
Figure 2-7 Multiple-host SCSI bus

Some advantages of the Mini Tabletop CTS in this configuration are:

- Either host has access to fast backup.
- Multiple connectors allow other devices to hang off bus.
- Command queuing maximizes bus efficiency.
- CTS supports either single-ended or differential configuration.
- Enclosure allows easy placement of CTS anywhere on SCSI bus.
- Backups can be performed in a secured location away from other devices on the bus.
- CTSs can be chained together to increase backup capabilities.
- You can easily back up medium to large systems with a standard procedure.

### Single-Host Configuration with Mini Tabletop CTS Termination

This configuration requires external termination on the Mini Tabletop CTS. Figure 2-8 shows a single host configuration using a Mini Tabletop CTS as the terminating device on the SCSI bus.



**Figure 2-8** Single-host SCSI bus with Mini Tabletop CTS terminating the bus

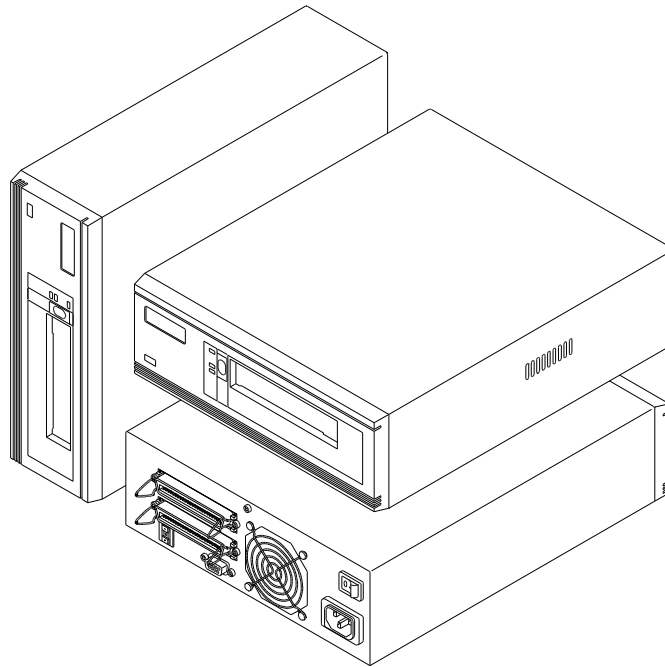
Some advantages of the Mini Tabletop CTS in this configuration are:

- Host has access to fast backup.
- Multiple connectors allow other devices to hang off bus.
- Command queuing maximizes bus efficiency.
- CTS supports either single-ended or differential configuration.
- Enclosure allows easy placement of CTS anywhere on SCSI bus.
- Backups can be performed in a secured location away from other devices on the bus.
- CTSs can be chained together to increase backup capabilities.
- You can easily back up medium to large systems with a standard procedure.

## Related Products: EXB-8505 8mm CTS

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The Mini Tabletop CTS can accommodate a single half-high EXB-8505 8mm CTS. Figure 2-10 shows a close-up view of the EXB-8505 in the Mini Tabletop CTS.



**Figure 2-9** EXB-8505 8mm Cartridge Tape Subsystem in a Mini Tabletop CTS

The EXB-8505 offers the following features:

- 4 Data formats: EXB-8500c and EXB-8200c compressed formats and EXB-8500 and EXB-8200 uncompressed formats
- 5 GByte native storage capacity
- 1 MByte/second sustained data transfer rate (2:1 compression ratio)
- $10^{17}$  Bit Error Rate
- 80,000 hours Mean Time Between Failure
- Intelligent IDRC data compression

For more information about the EXB-8505, refer to the following publications:

- *EXB-8505 8mm Cartridge Tape Subsystem Product Specification*
- *EXB-8505 8mm Cartridge Tape Subsystem User's Manual*

## Related Products: EXB-8205 8mm CTS

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The Mini Tabletop CTS can accommodate a single half-high EXB-8205 8mm CTS. Figure 2-9 shows a close-up view of the EXB-8205 in the Mini Tabletop CTS.

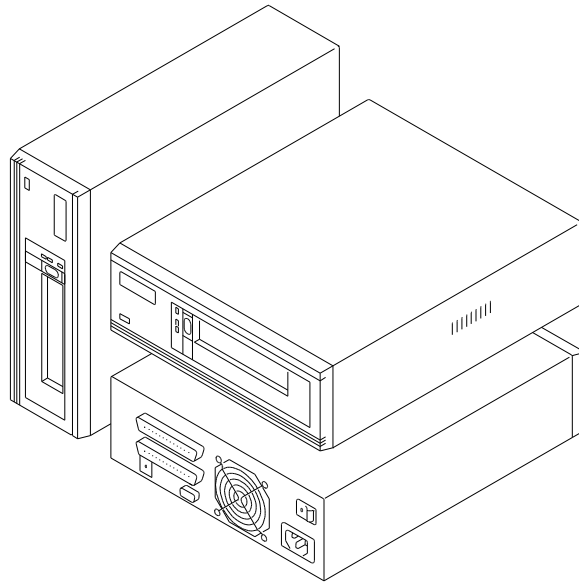


Figure 2-10 EXB-8205 8mm Cartridge Tape Subsystem in a Mini Tabletop CTS

The EXB-8205 offers the following features:

- 2 Data formats: EXB-8200c compressed format and EXB-8200 uncompressed format
- 2.5 GByte native storage capacity
- 500 KBytes/second sustained data transfer rate (2:1 compression ratio)
- $10^{17}$  Bit Error Rate
- 80,000 hours Mean Time Between Failure
- Intelligent IDRC data compression

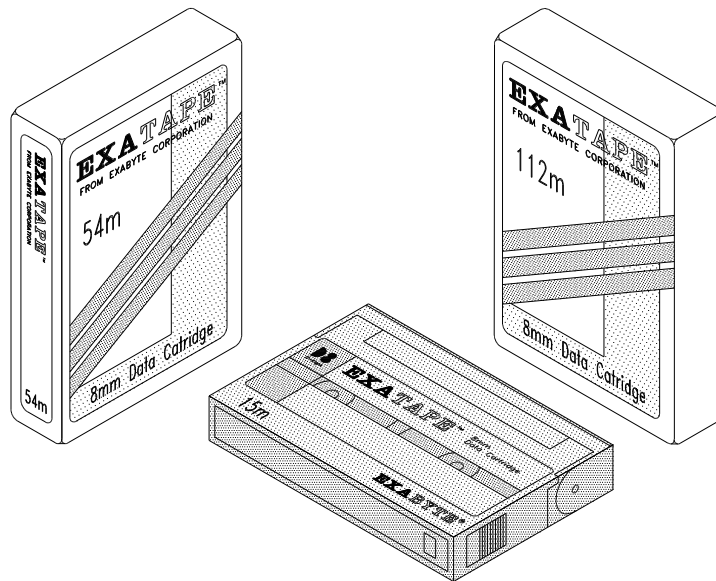
For more information about the EXB-8205, refer to the following publications:

- *EXB-8205 8mm Cartridge Tape Subsystem Product Specification*
- *EXB-8205 8mm Cartridge Tape Subsystem User's Manual*

## Related Products: EXATAPE™ Data Cartridges

**EXABYTE strongly recommends that EXATAPE data-grade metal-particle media be used with all EXABYTE products, including the Mini Tabletop CTS.**

EXATAPE media is specifically controlled for use in a data storage environment and offer extended durability, long-term archivability, and greater reliability. In addition, exclusive use of EXATAPE media with EXABYTE 8mm tape storage systems has been shown to prolong head and tape life. EXATAPE media meets specifications that are the most stringent in the industry.



EXATAPE data cartridges are available in the following three lengths:

- **EXATAPE 15m**
- **EXATAPE 54m**
- **EXATAPE 112m**

### Important

EXABYTE strongly recommends that you use EXATAPE data-grade metal-particle media in the CTS. Do not attempt to use "Hi-8" metal-particle or any type of metal-evaporative tape. These tapes will be ejected automatically by the CTS.

**Notes:**

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# 3

## Functional Performance

This chapter describes the following:

- Power specifications including information about the power supply, AC power characteristics, the power connector, power switch, power filter, and power consumption
- Environmental specifications such as air flow, shock and vibration, and acoustic noise
- Reliability specifications such as the mean time between failure (MTBF) and mean time to repair (MTTR)
- Interface specifications such as the SCSI specification and the specification for the Monitor port

# Power

---

This section describes the power specifications for the Mini Tabletop CTS, including information about the power supply, AC power, power connector, power cord, and power switch

## Power Supply

---

The Mini Tabletop CTS uses an internal switching power supply. You do not need to change any input settings. The power supply automatically adjusts for changes in voltage and frequency within the specified range. Table 3-1 contains the general specifications for the Mini Tabletop CTS power supply.

**Table 3-1** General power supply specifications

<b>Type</b>	30 watts switching
<b>Efficiency</b>	60% minimum
<b>Input voltage</b>	100 to 240 VAC @ 1 Amp maximum (autoswitching input selection—no user selection required)
<b>Frequency</b>	50 or 60 Hz $\pm$ 5% (autoswitching input selection—no user selection required)
<b>Switching frequency</b>	>30 KHz

## AC Power Characteristics

The Mini Tabletop CTS continues to operate when the AC power experiences intermittent operations, voltage surges, and voltage spikes. Table 3-2 shows the AC power characteristics acceptable to the Mini Tabletop CTS.

**Table 3-2** AC power characteristics

<b>Intermittent Operation</b>	100% line dropout for 1/2 cycle at nominal line voltage. 50% line reduction for 1 1/2 cycles at nominal line voltage. 20% line reduction for 2 1/2 cycles at nominal line voltage.
<b>Line discontinuities</b> <b>Voltage surges</b>	500 volts at nominal line voltage. Pulse Width: 100 ns Rise Time: 5 ns Repetition Rate: 1 Hz Common and differential mode, positive and negative polarity.
<b>Voltage spikes</b>	1 to 5 KV at nominal line voltage. Pulse Width: 1 μs Rise Time: 25 ns Repetition Rate: 1 Hz Common and differential mode, positive and negative polarity.

The Mini Tabletop CTS power consumption specifications are shown in Table 3-3.

**Table 3-3** AC power consumption

<b>Average current</b>	0.265 amps
<b>Maximum current</b>	0.340 amps

## Power Connector and Power Cord

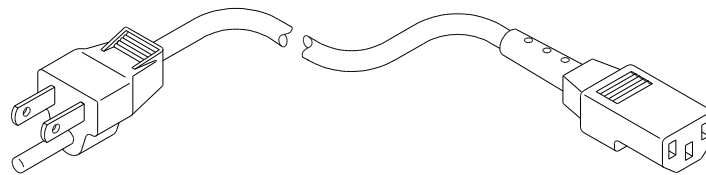
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The AC power connector is a standard IEC type CEE-22 male connector. The Mini Tabletop CTS includes a 120 VAC three-conductor power cord for use in the United States and Canada. The Mini Tabletop CTS can operate from 100 to 240 VAC, with a frequency of 50 or 60 Hz, without manual intervention. You must supply power cords for other input voltages or when using the Mini Tabletop CTS outside of the United States and Canada. The following describes the 120 VAC and 220 VAC cords for use in the United States and Canada and the International 220 VAC.

### 120 VAC Power Cord for the United States and Canada

The three-conductor, 18AWG, SVT or SJT type AC power cord for 120 volt use in the United States and Canada shipped with the Mini Tabletop CTS has a molded NEMA 5-15P male connector on one end and a molded IEC type CEE-22 female connector on the other end. The power cord is UL Listed and CSA Certified.

Figure 3-1 shows a 120 VAC power cord for the United States and Canada.



**Figure 3-1** 120 VAC power cord for the United States and Canada

### International 220 VAC Power Cord

An international 220 VAC power cord for the Mini Tabletop CTS must meet the following requirements:

- The power cord must have an attachment plug of the proper type, rating, and safety approval for the intended country.
- The power cord must have an IEC type CEE-22 female connector on one end.
- The cordage must be adequately rated and harmonized to CENELEC publication HD-21.

Figure 3-2 shows an international 220 VAC power cord for the United Kingdom.

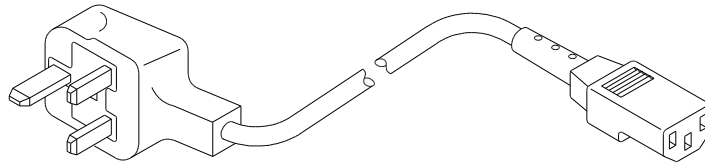


Figure 3-2 220 VAC international power cord for the United Kingdom

### 220 VAC Power Cord for the United States and Canada

A 220 VAC power for the Mini Tabletop CTS must meet the following requirements:

- The power cord must have a NEMA 6-15P male connector on one end.
- The power cord must have an IEC type CEE-22 female connector on the other end.
- The cordage used must be an SVT or SJT type, three conductor, 18 AWG minimum.
- The power cord must comply with local electrical code.

## Power Entry Module

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The power entry module includes an AC line filter to minimize conduction of any interference signals to the AC line.

## Power Switch

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The power switch controls all power to the Mini Tabletop CTS and the installed CTS. Press 0 to turn the power switch off. Figure 3-3 shows the power switch in the off position.

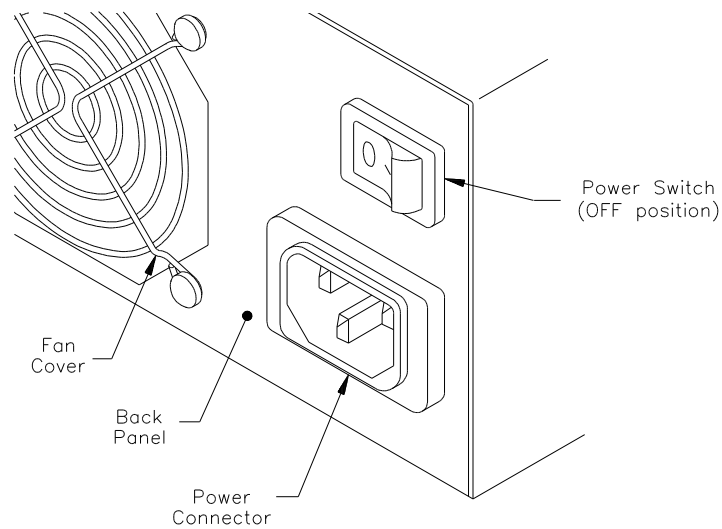


Figure 3-3 Power switch in the off position

# Environmental Specifications

This section describes the environmental specifications for the Mini Tabletop CTS, including information about the operating environment, air flow requirements, particulate contamination, shock and vibration, and acoustic noise.

Table 3-3 lists the general environmental specifications for the Mini Tabletop CTS.

**Table 3-4** Environmental specifications for the Mini Tabletop CTS

Specification	Operating <sup>a</sup>	Storage <sup>b</sup> or not operating <sup>c</sup>	Transportation <sup>d</sup>
<b>Ambient Temperature Range</b>	+5° C to +40° C (+41° F to +104° F)	−40° C to +60° C (−40° F to +140° F)	−40° C to +60° C (−40° F to +140° F)
<b>Temperature Variation<sup>e</sup></b>	1° C per minute; max 10° C per hour	1° C per minute; max 20° C per hour	1° C per minute; max 20° C per hour
	2° F per minute; max 18° F per hour	2° F per minute; max 36° F per hour	2° F per minute; max 36° F per hour
<b>Relative Humidity<sup>e</sup></b>	20% to 80% Non-condensing	10% to 90% Non-condensing	10% to 90% Non-condensing
<b>Wet Bulb</b>	26° C (79° F) max	29° C (84° F) max	29° C (84° F) max
<b>Altitude</b>	−304.8 m to +3,048 m (−1,000 ft to +10,000 ft)	−304.8 m to +3,048 m (−1,000 ft to +10,000 ft)	−304.8 m to +12,192 m (−1,000 ft to +40,000 ft)

<sup>a</sup> Temperature measurements are taken on the integral CTS. All operating measurements include a standard EXATAPE data cartridge and assume that the Mini Tabletop CTS is installed in accordance with the instructions in the installation guide.

<sup>b</sup> The Mini Tabletop CTS has not been unpacked, and data cartridges are not packed with the Mini Tabletop CTS. The Mini Tabletop CTS's packaging is designed to protect the device from condensation caused by extreme temperature variations. **When the device is moved from a cold storage environment to a warm operating environment, it must acclimate in its packaging for at least 12 hours before opening to prevent serious condensation damage from occurring.**

<sup>c</sup> The Mini Tabletop CTS has been unpacked but is not operating, and a data cartridge is not inserted.

<sup>d</sup> The Mini Tabletop CTS has not been unpacked, the transportation period does not exceed 72 hours, and a data cartridge is not packed with the Mini Tabletop CTS.

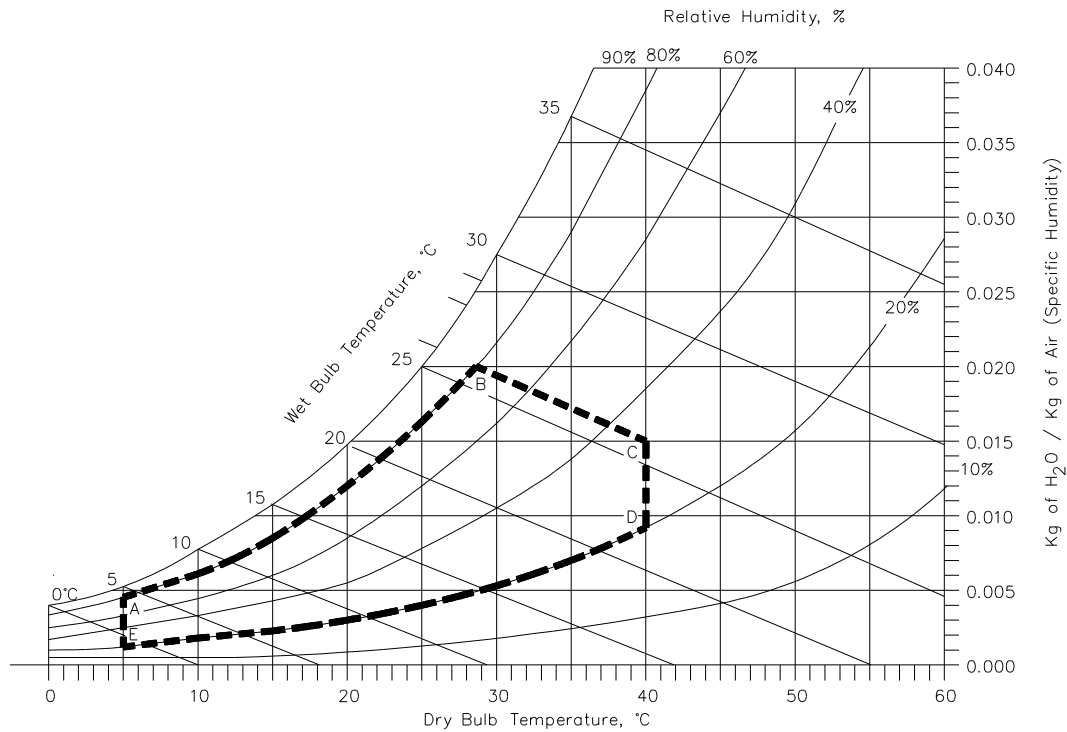
<sup>e</sup> The data cartridge's temperature and humidity must be allowed to stabilize in the specified ambient environment for 12 hours.

## Operating Environment

The psychrometric chart shown in Figure 3-4 shows the operating temperature and humidity ranges for the Mini Tabletop CTS. The dotted line represents the operating environment. Table 3-4 defines the temperature and humidity points shown in Figure 3-4.

**Table 3-5** Temperature and humidity points for psychrometric chart

Point	Temperature	Humidity
A	5° C	80%
B	29° C	80%
C	40° C	34%
D	40° C	20%
E	5° C	20%



**Figure 3-4** Temperature and humidity limits for the Mini Tabletop CTS



## Air Flow Requirements

A thermistor-controlled fan controls air flow through the Mini Tabletop CTS. Air flows from the front of the Mini Tabletop CTS to the rear through a specially designed series of vents built into the metal enclosure. To maintain the internal temperature of the Mini Tabletop CTS within 2° C of ambient temperature, the thermistor increases or decreases air flow based on environmental temperature changes.

Figure 3-5 shows the flow of air through the Mini Tabletop CTS.

### CAUTION

Do not cover the air flow vents on the right side of the Mini Tabletop CTS (shown in Figure 3-5). Covering these vents can cause the CTS to overheat and damage equipment and the data cartridge.

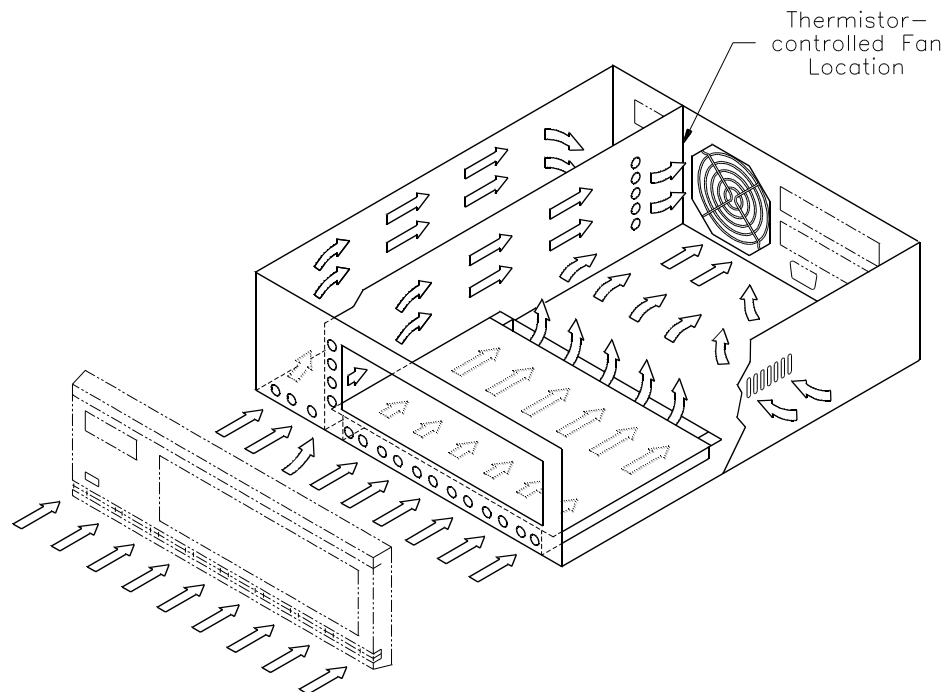


Figure 3-5 Air flow through the Mini Tabletop CTS

## Particulate Contamination Limits

The ambient operating environment should not exceed the particulate counts shown in Table 3-5.

Table 3-6 Maximum particulate counts for Mini Tabletop CTS operation

Particle Size (microns)	Number of Particles $\geq$ Particle Size (per cubic meter)	Number of Particles $\geq$ Particle Size (per cubic foot)
0.1	$8.8 \times 10^7$	$2.5 \times 10^6$
0.5	$3.5 \times 10^7$	$1.0 \times 10^6$
5.0	$2.5 \times 10^5$	$7.0 \times 10^3$

Figure 3-6 shows the particulate contamination profile of a typical office compared to the specifications for the Mini Tabletop CTS. Individual office area contamination profiles vary.

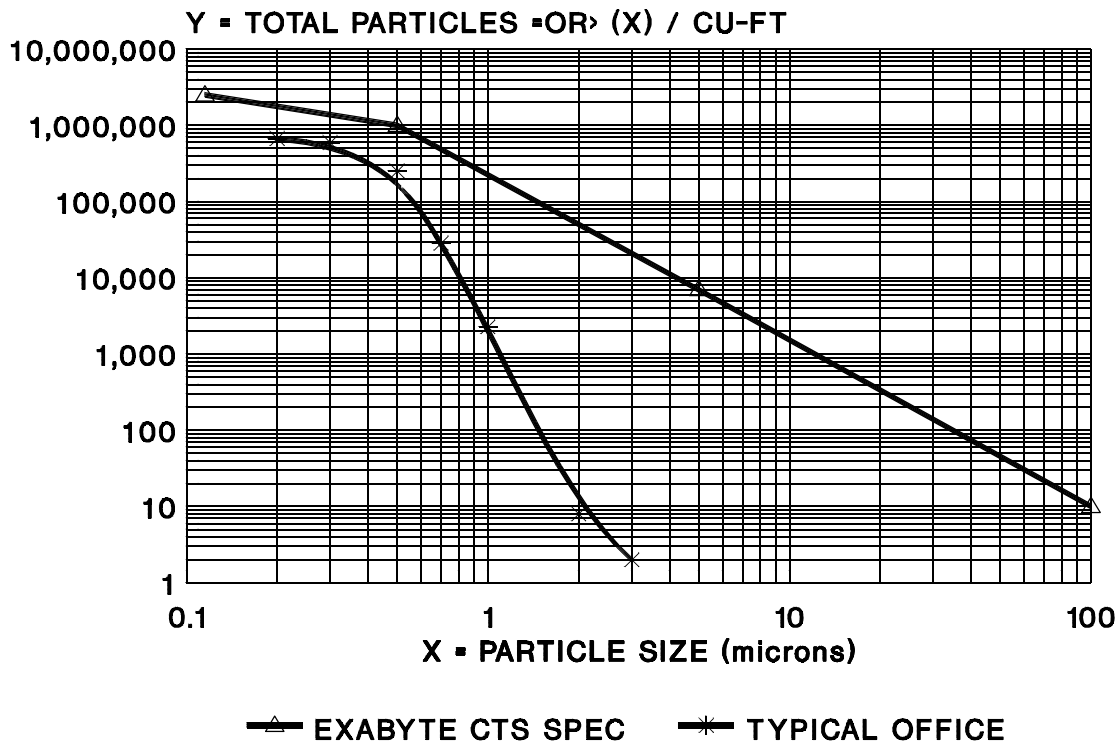


Figure 3-6 Particulate contamination specification vs. typical office

## Shock and Vibration

---

This section describes the expected shock and vibration specifications for the Mini Tabletop CTS. Table 3-6 contains the shock specifications for the Mini Tabletop CTS. The operating shock levels indicate the amount of shock that the Mini Tabletop CTS can withstand while reading and writing data. The shock pulses are half-sine waves applied to each of the three orthogonal axes of the Mini Tabletop CTS.

**Table 3-7** Shock specifications for the Mini Tabletop CTS

Operating	Storage <sup>a</sup> or Not Operating <sup>b</sup>	Transportation <sup>a</sup>
3 g for 5 ms <sup>c</sup>	45 g at a velocity change of	NSTA Project 1A
2 g for 11 ms <sup>c</sup>	167 inch/sec <sup>d</sup>	

<sup>a</sup> The Mini Tabletop CTS has not been unpacked.

<sup>b</sup> The Mini Tabletop CTS has been unpacked, but has not been powered on.

<sup>c</sup> A minimum of 20 shock pulses were applied to each of the three orthogonal axes. The shock pulses were half-sine waves and were applied at a rate not exceeding one shock per second.

<sup>d</sup> A minimum of three trapezoidal shock pulses of 45 g were applied to each of the Mini Tabletop CTSs six sides at a velocity change of 167 inches per second (equivalent height equals 36 inches).

Table 3-7 contains the vibration specifications for the Mini Tabletop CTS. The operating vibration levels indicate the amount of vibration that the Mini Tabletop CTS can withstand while reading and writing data.

**Table 3-8** Vibration specifications for the Mini Tabletop CTS

<b>Random vibration<sup>a</sup> applied during operation</b>	
5 - 350 Hz	PSD = 0.0002 g <sup>2</sup> /Hz
350 - 500 Hz	Slope = -6 dB/Oct
500 Hz	PSD = 0.0001 g <sup>2</sup> /Hz
<b>Random vibration<sup>b</sup> applied during non-operation<sup>c</sup> and storage<sup>d</sup></b>	
5 - 100 Hz	PSD = 0.020 g <sup>2</sup> /Hz
100 - 137 Hz	Slope = -6 dB/Oct
137 - 350 Hz	PSD = 0.0107 g <sup>2</sup> /Hz
350 - 500 Hz	Slope = -6 dB/Oct
500 Hz	PSD = 0.0052 g <sup>2</sup> /Hz
<b>Transportation<sup>d</sup></b>	
NSTA Project 1A	

<sup>a</sup>A 0.30 g RMS random vibration spectrum is applied to each of three orthogonal axes for a minimum of 20 minutes per axis.

<sup>b</sup>A 2.41 g RMS random vibration spectrum is applied to each of three orthogonal axes for a minimum of 20 minutes per axis.

<sup>c</sup>The Mini Tabletop CTS has been unpacked, but has not been powered on.

<sup>d</sup>The Mini Tabletop CTS has not been unpacked.

## Acoustic Noise

---

In a 5 Hz to 12.5 Hz frequency range, the overall, averaged A-weighted sound power levels (decibels) for the Mini Tabletop CTS do not exceed the upper limits specified in Table 3-8.

**Table 3-9** Acoustic noise limits

<b>Operating Mode</b>	<b>LWA (average A-weighted sound power level)</b>
<b>Power On</b>	40 dba
<b>Fully Operational</b>  (operating in streaming mode for a read or write operation)	45 dba

# Interface Specifications

---

This section describes the interface specifications for the Mini Tabletop CTS, including information about SCSI features, the SCSI ID switch, SCSI connectors, SCSI cable requirements, SCSI bus termination, SCSI commands and messages, and the Monitor port.

## SCSI Features

---

The Mini Tabletop CTS Small Computer System Interface (SCSI) conforms to the following standard for a sequential access device:

- ANSI *Small Computer System Interface-2 (SCSI-2)*, X3.131-1991

The CTS uses one of the following SCSI Bus Interface Controllers:

- 33C93A for single-ended SCSI configurations
- 33C92A for differential SCSI configurations

The SCSI controller includes the following:

- Support for single-ended or differential SCSI configurations
- SCSI bus parity checking (configure with MODE SELECT)
- Support for multiple initiator configurations
- Asynchronous data transfer rates of up to 2.5 MBytes/second
- Synchronous data transfer rates of up to 5.0 MBytes/second
- Sustained data transfer rates of:
  - EXB-8500 format (EXB-8505 only): up to 500 KBytes/second
  - EXB-8500c format (EXB-8505 only): 1 MBytes/second (2:1 compression ratio)
  - EXB-8200 format: up to 262.5 KBytes/second
  - EXB-8200c format: 500 KBytes/second (2:1 compression ratio)

## SCSI ID Switch

---

The SCSI ID switch is an incremental switch located on the back panel of the Mini Tabletop CTS, as shown in Figure 3-7. You can use this switch to define the device address for the CTS on the SCSI bus. The CTS uses this address during arbitration. You can set the ID to an address of 0 through 7. The default address setting is 0 when the Mini Tabletop CTS is shipped.

**Note:** Use a pen or other fine-tipped instrument to change the address on the switch.

For further information on setting the SCSI ID, refer to Chapter 4.

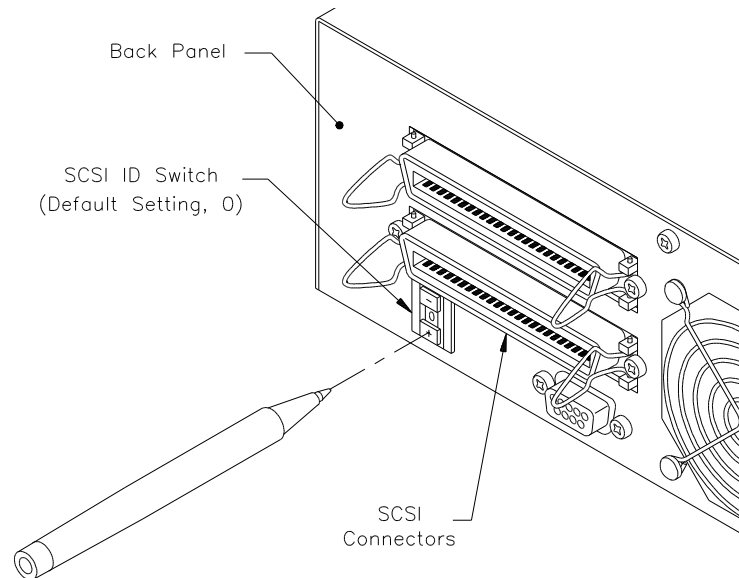


Figure 3-7 SCSI ID switch for the Mini Tabletop CTS

## SCSI Connectors

Two SCSI connectors located on the back panel of the Mini Tabletop CTS are 50-contact female ribbon connectors. To connect the Mini Tabletop CTS to the SCSI bus, use a 50-pin male ribbon cable connector (AMP No. 554953-1).

The SCSI connectors accommodate either a single-ended or differential cable configuration. However, you cannot mix single-ended and differential cables in the same system.

**Note:** The connectors are standard SCSI connectors. You can connect cables or terminators to either connector.

## SCSI Cable Requirements

The Mini Tabletop CTS does not include a SCSI cable. Table 3-9 lists the recommended specifications for SCSI cables for the Mini Tabletop CTS.

### CAUTION

You must use a shielded SCSI cable to comply with FCC and VDE rules and to avoid damage to other equipment on the SCSI bus.

**Table 3-10** Recommended general specifications for the SCSI cable

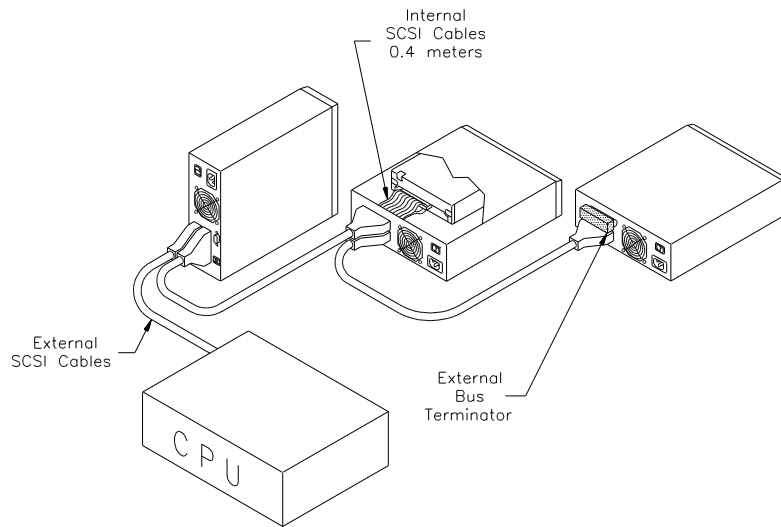
<b>Standard construction</b>	50 conductors (25 twisted pairs with drain wire and shield)
<b>Primary conductors</b>	Insulated per UL Style 1589
<b>Gauge</b>	#28 AWG minimum stranded (7/34) annealed
<b>Insulation</b>	Polypropylene (80°C) 0.010 inch nominal
<b>Shielding</b>	80% minimum tinned copper braid over aluminum/mylar foil
<b>Outer jacket</b>	Insulated per UL Style 2919
<b>Voltage rating</b>	30 VAC
<b>Impedance</b>	100 Ohms $\pm 10\%$ @ 1.5 MHz.
<b>Grounding</b>	Case-to-case grounding

### Cable Length

As Figure 3-8 shows, each Mini Tabletop CTS attached to the SCSI bus uses 0.4 meters (1.31 feet) of the total allowable bus length internally. The maximum length of the SCSI cable depends on whether you are using a differential or single-ended SCSI configuration.

- Differential: maximum bus length = 25 meters (82 feet)
- Single-ended: maximum bus length = 6 meters (19.7 feet)





**Figure 3-8** Length of SCSI cable used internally by the Mini Tabletop CTS

Use the following steps to determine the allowable distance (in meters) between devices on the bus:

1. Measure the length (in meters) of all external SCSI cable connecting each device.
2. Add these lengths together.
3. Multiply 0.4 meters times the number of Mini Tabletop CTSs.
4. Add the product from step 3 to the total cable length from step 2. If this is a single-ended configuration, the amount should not exceed 6 meters. If this is a differential configuration, it should not exceed 25 meters.

You can also use the following formula to determine the allowable distance (in meters) between devices on the bus:

$$\text{Total Length} = L_1 + L_2 + \dots + L_n + 0.4n$$

$L$  = Length in meters between devices on the bus

$n$  = Number of devices on the bus

## SCSI Bus Termination

---

The Mini Tabletop CTS does not include internal SCSI bus terminators. If the Mini Tabletop CTS is the last device on the SCSI bus, attach an external terminator to either one of the SCSI connectors. Use one of the following external terminators:

- Single-ended external terminator (EXABYTE part number 002201), Methode Electronics, Inc. dataMate® DM800-09-0
- Differential external terminator (EXABYTE part number 002202), Methode Electronics, Inc. dataMate DM800-08-0

## SCSI Message System

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The Mini Tabletop CTS uses the SCSI message system for physical path management. Table 3-10 lists the SCSI messages supported by the CTS. Refer to the user's manual for your CTS for more information about SCSI communications and messages.

**Table 3-11** SCSI messages supported by the Mini Tabletop CTS

Hex Value	Description	In (CTS to initiator)	Out (Initiator to CTS)
00h	Command Complete	✓	
01h	Extended Message (Synchronous Data Transfer Request)	✓	✓
02h	Save Data Pointers	✓	
03h	Restore Pointers	✓	
04h	Disconnect	✓	
05h	Initiator Detected Error		✓
06h	Abort		✓
07h	Message Reject	✓	✓
08h	No Operation		✓
09h	Message Parity Error		✓
0Ch	Bus Device Reset		✓
80h or C0h	Identify	✓	✓

## SCSI-2 Command Set

The CTS enclosed in the Mini Tabletop CTS supports 19 six-byte commands (Group 0 command set) and 6 ten-byte commands (Group 1 command set) in the SCSI-2 command set. Table 3-11 lists these commands. For detailed information about these commands, see the user's manual for your CTS.

**Note:** The LOCATE and READ POSITION commands are not supported for tapes written in EXB-8200 format.

**Table 3-12** SCSI-2 command set

Command	OP Code	Description
ERASE	19h	Causes the CTS to erase all tape from the current tape position to the physical end of tape.
INQUIRY	12h	Requests that information about the CTS parameters be sent to the initiator.
LOAD/UNLOAD	1Bh	Causes the CTS to load or unload the data cartridge.
LOCATE	2Bh	Allows you to position the tape at a specified logical block address. Used in conjunction with the READ POSITION command.
LOG SELECT	4Ch	Allows you to manage the counters that the CTS maintains about its write and read error recovery operations.
LOG SENSE	4Dh	Allows you to retrieve statistical information about the CTS's read and write error recovery operations.
MODE SELECT	15h	Allows you to specify medium, logical unit, and device parameters.
MODE SENSE	1Ah	Enables the CTS to report medium, logical unit, or device parameters.
PREVENT/ALLOW MEDIUM REMOVAL	1Eh	Allows or disallows the removal of the data cartridge.
READ	08h	Transfers one or more bytes or blocks of data from the tape.
READ BLOCK LIMITS	05h	Requests that the CTS return data identifying the maximum and minimum logical block lengths.
READ BUFFER	3Ch	Copies the CTS's microcode across the SCSI bus to the initiator. Used in conjunction with the WRITE BUFFER command.

<b>Command</b>	<b>OP Code</b>	<b>Description</b>
READ POSITION	34h	Reports the CTS's current logical position but does not cause tape motion to occur. Used in conjunction with the LOCATE command.
RECEIVE DIAGNOSTIC RESULTS	1Ch	Allows you to obtain the results of the tests requested by a previous SEND DIAGNOSTIC command or to obtain a trace of SCSI and servo command activity for the CTS.
RELEASE UNIT	17h	Releases a CTS from exclusive use, or if third-party reservations are in effect, from another SCSI device's use. Used with the RESERVE UNIT command.
REQUEST SENSE	03h	Requests that the CTS transfer sense data.
RESERVE UNIT	16h	Reserves the CTS for your exclusive use, or with third-party reservations, for another SCSI device's use. Used with the RELEASE UNIT command.
REWIND	01h	Causes the CTS to rewind the tape to the logical beginning of tape.
SEND DIAGNOSTICS	1Dh	Causes the CTS to perform certain self-diagnostic tests.
SPACE	11h	Enables the CTS to perform forward or backward searches.
TEST UNIT READY	00h	Allows you to determine if the CTS is ready to accept an appropriate medium access command.
VERIFY	13h	Enables the CTS to verify one or more logical blocks of data on the tape.
WRITE	0Ah	Transfers one or more bytes or blocks of data to the tape.
WRITE BUFFER	3Bh	Allows you to load new microcode from the SCSI bus into the CTS's control memories. Used with the READ BUFFER command.
WRITE FILEMARKS	10h	Causes the CTS to write one or more filemarks to tape.

## Monitor Port

---

The Mini Tabletop CTS includes a Monitor port on the back panel. You can use this port to perform diagnostic procedures and load microcode on the Mini Tabletop CTS. Service personnel can also access the Monitor port of the enclosed CTS through this port. To use the Monitor port, you must have:

- An IBM AT®, XT™, or compatible system with a serial port
- An RS-232 cable with a D-sub 9-pin connector
- The CTS Monitor program

## Reliability Specifications

---

This section describes the reliability specifications for the Mini Tabletop CTS.

**Note:** These reliability specifications for the Mini Tabletop CTS apply only when the Mini Tabletop CTS is operated in accordance with the specifications listed in this specification.

## Mean Time Between Failures

---

The Mini Tabletop CTS can achieve a mean time between failures (MTBF) of 80,000 hours at a 10% duty cycle. This MTBF value is the same as the MTBF value for the enclosed CTS. For more information about the calculations and conditions for MTBF, refer to the product specification for your CTS (see Chapter 1 for a list of manuals).

## Mean Time to Repair

---

If the Mini Tabletop CTS is treated as a field replaceable unit (FRU), the mean time to repair the Mini Tabletop CTS is less than 15 minutes.

**Notes:**

---

# 4

## Safety and Regulatory Agency Compliance

This chapter describes the following:

- Safety agency standards
- Electrostatic discharge (ESD) standards
- Electromagnetic compatibility (EMC)
- Radiated interference susceptibility including electromagnetic interference (EMI) and radio frequency interference (RFI)
- Other test standards

## Safety Agency Standards

---

When purchased from EXABYTE Corporation, the Mini Tabletop CTS with the EXB-8205 or EXB-8505 installed is certified as a component by the following domestic and international product safety standards.

- UL Standard 1950, 1st Edition, Information Technology Equipment
- CAN/CSA Standard C22.2 No. 950-M89, Safety of Information Technology Equipment (pending)
- IEC 950/EN60950, Safety of Information Technology Equipment including Electrical Business Equipment (TUV)

## Electrostatic Discharge (ESD)

---

When properly installed with shielded cables and adequate grounding of the SCSI bus and input AC power, the Mini Tabletop CTS can withstand the following discharges:

- Up to 10,000 volts applied during normal use without affecting the permanent read error rate or requiring your intervention.
- Up to 15,000 volts applied during normal use with no permanent damage to the Mini Tabletop CTS. However, you may have to reset the Mini Tabletop CTS at this level of discharge.

**Note:** No errors or damage occur when you insert a cartridge charged between 2,000 and 20,000 volts into the Mini Tabletop CTS.



## Electromagnetic Compatibility (EMC)

---

When properly installed with shielded cables, and adequate grounding of the SCSI bus and the input power, the Mini Tabletop CTS meets the following standards for electromagnetic compatibility:

- FCC Rules, Part 15, Class B Computing Devices
- Canadian Department of Communications, Radio Interference Regulation, Digital Apparatus, Class B
- VDE Vfg 1046/1984, Class B
- CISPR Publication 22, Class A

## Radiated Interference Susceptibility

---

When properly installed with shielded cables, and adequate grounding of the SCSI bus and the input power, the Mini Tabletop CTS meets the following standard for susceptibility to severe levels of electromagnetic radiation:

- IEC 801-3, Severity Level 2 (3 v/meter)

## Other Test Standards

---

When shipped, the Mini Tabletop CTS and the enclosed CTS are packaged in a manner that complies with the testing criteria defined by National Safe Transit Association (NSTA), Project 1A.

**Notes:**

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# 5

## Shipping and Installation

This chapter includes the packing and shipping specifications for the Mini Tabletop CTS. It also describes the requirements for installing the Mini Tabletop CTS.

# Shipping Requirements

---

This section describes the shipping requirements for the Mini Tabletop CTS, including information about the shipping carton and a list of the environmental conditions required for transporting the Mini Tabletop CTS.

## Shipping Carton

---

The Mini Tabletop CTS is sealed in a static protection bag and is shipped with one unit per carton. The shipping cartons and internal packing materials are designed so that an enclosed Mini Tabletop CTS does not receive a shock greater than 45 g when the carton is dropped on any surface, corner, or edge from the following height:

- 36 inches (91.4 cm) at a velocity change of 167 inches per second (424 cm/sec)

The shipping carton passes the tests described in the National Safe Transit Association (NSTA) Project 1A for packaged products weighing less than 100 pounds.

The shipping carton outside dimensions are 17<sup>3</sup>/<sub>4</sub> inches long × 16<sup>1</sup>/<sub>4</sub> inches wide × 10<sup>3</sup>/<sub>4</sub> inches high (45 × 41 × 27 cm).

A fully packed Mini Tabletop CTS weighs 12 pounds (5.4 kg).

The Mini Tabletop CTS's packing materials are unbleached, reusable, recyclable, and environmentally safe. The materials contain no chlorofluorocarbons (CFCs) or heavy metals.

## Environmental Specifications for Transportation

The environmental specifications listed in Table 5-1 must be met whenever the Mini Tabletop CTS is transported.

**Table 5-1** Environmental specifications for transporting the Mini Tabletop CTS

Specification	Range
Temperature Range	-40° C to +60° C (-40° F to +140° F)
Temperature Variation	1° C per minute up to a maximum of 20° C per hour (2° F per minute up to a maximum of 36° F per hour)
Relative Humidity	10% to 90% non-condensing
Wet Bulb	26° C max (79° F max)
Altitude	-304.8 m to +12,192 m (-1,000 ft to +40,000 ft)

## Unpacking the Mini Tabletop CTS

### CAUTION

**If the current environment differs from the storage environment by 15° C or more, let the Mini Tabletop CTS acclimate in its packaging to the current environment for at least 12 hours.**

The Mini Tabletop CTS's packaging is designed to protect the CTS from potentially damaging condensation. If the Mini Tabletop CTS has not acclimated in its packaging for at least 12 hours, serious damage can occur.

After the Mini Tabletop CTS has acclimated to the current environment unpack it as follows:

1. Remove the adhesive tape from the top of the carton and open the carton flaps.
2. Carefully remove the packing material from the top of the Mini Tabletop CTS.

3. Holding the bottom edges of the Mini Tabletop CTS, lift it out of the carton and place it on a flat, level surface.
4. Check the contents of the carton against the packing list and inspect the Mini Tabletop CTS for possible damage. If a part is missing or the Mini Tabletop CTS is damaged, notify the carrier and your vendor immediately.
5. Save the original packing materials. If you need to ship the Mini Tabletop CTS, use the original shipping carton and packing materials.

**Important**

If the Mini Tabletop CTS has been stored for more than six months, you need to perform several extra steps before normal operation. Refer to the *EXB-8205 8mm Cartridge Tape Subsystem User's Manual* or the *EXB-8505 8mm Cartridge Tape Subsystem User's Manual* for information.

## Packing the Mini Tabletop CTS

---

To pack the Mini Tabletop CTS for shipment, place the Mini Tabletop CTS in the static protection bag and assemble the packing materials as shown. Do not ship any other items in the package.

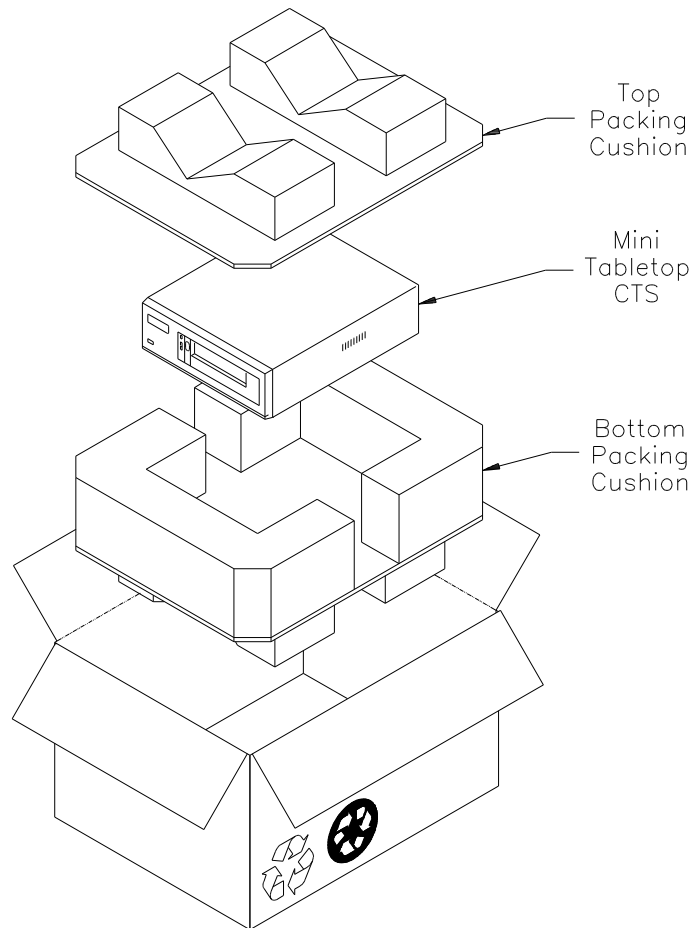


Figure 5-1 Packaging materials for the Mini Tabletop CTS

# Installing the Mini Tabletop CTS

---

This section describes the Mini Tabletop CTS requirements for each installation step. Installing the Mini Tabletop CTS requires the following steps:

- Set the SCSI ID
- Place the pads for vertical or horizontal orientation
- Connect external terminators, if termination is required
- Connect SCSI cables to the external SCSI connectors
- Connect the power cable to the Mini Tabletop CTS
- Observe the power-on self-test

## Requirements for setting the SCSI ID

The SCSI ID is the address asserted by the Mini Tabletop CTS during arbitration. The Mini Tabletop CTS can have a SCSI ID of 0 through 7. The default setting for shipping is 0.

**Note:** Changes in the SCSI ID setting do not take effect until one of the following conditions occur:

- Normal power-on
- SCSI bus reset
- Bus Device Reset message

## Requirements for placing orientation pads

When shipped, the Mini Tabletop CTS includes five self-adhesive orientation pads. Before placing the orientation pads, decide on either a vertical or horizontal orientation for the Mini Tabletop CTS. A vertical orientation requires that you place the pads on the right side of the device (the side with the external vents). A horizontal orientation requires that you place the pads on the underside of the device. Place the pads approximately ½ inch (1.3 cm) from the corners.

### CAUTION

Failure to place pads on the Mini Tabletop CTS for a vertical orientation can block the air flow vents and cause overheating of the enclosed CTS.



## Requirements for SCSI bus termination

If the Mini Tabletop CTS is the last device on the SCSI bus, you must place an external terminator on one of the SCSI connectors. Single-ended and differential configurations use different terminators. You can place the terminator in either connector on the Mini Tabletop CTS.

- **If you use a single-ended configuration**, EXABYTE recommends a Methode Electronics, Inc. dataMate® DM800-09-0 single-ended external terminator (EXABYTE part number 002201).
- **If you use a differential configuration**, EXABYTE recommends a Methode Electronics, Inc. dataMate DM800-08-0 differential external terminator (EXABYTE part number 002202).

## Requirements for connecting a SCSI cable

You must provide a SCSI cable that complies with the appropriate safety and regulatory agency requirements. To comply with FCC, Canadian DOC, and VDE limits, the Mini Tabletop CTS requires all external cables to be shielded.

**Impedance** Ideally, to match the cable terminators, the cable should have a characteristic impedance of 122 ohms (differential) or 132 ohms (single-ended). However, since cables with this level of impedance are difficult to find, you can use cables with a lower impedance. Use a characteristic impedance greater than 90 ohms for shielded cables. To minimize discontinuities and signal reflections, EXABYTE recommends that cables used on the same bus have the same impedance.

### Important

Use a minimum conductor size of 28 AWG to minimize noise effects and ensure proper distribution of terminator power.

**Cable length** The maximum length of the SCSI cable depends on the configuration you use, as follows:

- **For single-ended SCSI configurations**, the maximum bus length is 6 meters (19.7 feet).
- **For differential SCSI configurations**, the maximum bus length is 25 meters (82 feet).

## Requirements for the SCSI cable connector

The SCSI connectors on the back of the Mini Tabletop CTS are 50-contact female ribbon cable connectors. To connect the Mini Tabletop CTS to the SCSI bus, use a shielded 50-pin male ribbon cable connector (AMP No. 55493-1).

## Requirements for connecting the power cord

A 120 VAC three-conductor power cord for use in the United States and Canada is included with the Mini Tabletop CTS. For information on power cord requirements for 220 VAC in the United States and other countries, see Chapter 3. To meet regulatory guidelines and prevent damage to your Mini Tabletop CTS, you must use power cords that meet the specifications described in this specification.

## Observing the power-on self-test

When you turn on the power, the power-on LED on the front of the Mini Tabletop CTS turns green, the thermistor-controlled fan mounted at the back of the Mini Tabletop CTS begins to rotate, and the CTS's 32-second power-on self-test (POST) begins. The table below shows the LED combinations indicating a successful or failed POST.

	CTS State				
	POST (start)	POST (end)	POST (fail)	Ready no tape	Ready tape
Top LED (errors)	●	●	* fast	○	○
Middle LED (SCSI) <sup>a</sup>	● (green)	* irregular	* irregular	* irregular	* irregular
Bottom LED (motion)	●	○ <sup>b</sup>	○	○	●

<sup>a</sup> Green—uncompressed format tape.  
Amber—compressed format tape.

<sup>b</sup> If a data cartridge is loaded, the bottom LED will flash slow and then fast during the second part of the power-on self-test.

### Key for Table 5-1

●	○	*
The LED is on.	The LED is off.	The LED is flashing:
		* <b>slow</b> = 1 flash/second (0.94 Hz)
		* <b>fast</b> = 4 flashes/second (3.76 Hz)
		* <b>irregular</b> = Rate of flash varies with SCSI bus activity. If the CTS is not connected to the bus, the LED is off.

# 6

## Maintenance

This chapter describes the preventive maintenance requirements for the Mini Tabletop CTS, including cleaning and replacing the power cord.

# Preventive Maintenance

---

Except for cleaning and replacing the power cord, the Mini Tabletop CTS has no user serviceable adjustments or maintenance procedures. All service or repairs to the Mini Tabletop CTS must be performed by EXABYTE Corporation or authorized service personnel.

## Cleaning the Mini Tabletop CTS

---

The heads and tape path should be cleaned on a regular basis. The only cleaning material authorized for use with the Mini Tabletop CTS is an EXABYTE 8mm cleaning cartridge.

- **For step-by-step instructions** for cleaning the CTS, refer to *Mini Tabletop 8mm Cartridge Tape Subsystem Installation*.
- **Do not use** cloth swabs, cotton swabs, or any cleaning agents other than an EXABYTE-approved cleaning cartridge.
- **After every 30 tape motion hours** you should clean the heads and tape path.
- **The format in which you write and read data** does not affect cleaning frequency.
- **A dirty environment or infrequent operation** requires that you clean the CTS more often than every 30 tape motion hours.
- **After 30 hours**, the top and bottom LEDs will flash rapidly and the middle LED will flash irregularly, depending on SCSI bus activity.
- **To prevent contamination and damage** to the heads, do not use the cleaning cartridge for more than the number of cleaning cycles specified on the cartridge label.
- **Do not rewind** the cleaning cartridge and attempt to reuse it.

## Replacing the AC Power Cord

---

The Mini Tabletop CTS includes a seven-foot (2.1-meter), three-conductor AC power cord for 120 volt use in the United States and Canada. If you plan to use an input voltage other than 120 volts AC or if you use the Mini Tabletop CTS outside of the United States or Canada, you must supply your own power cord. Refer to Chapter 3 for a description of power cord requirements.

## Removing and Replacing the Cover

---

If you need to remove the cover to view the information on the enclosed CTS drive, follow the procedures listed below.

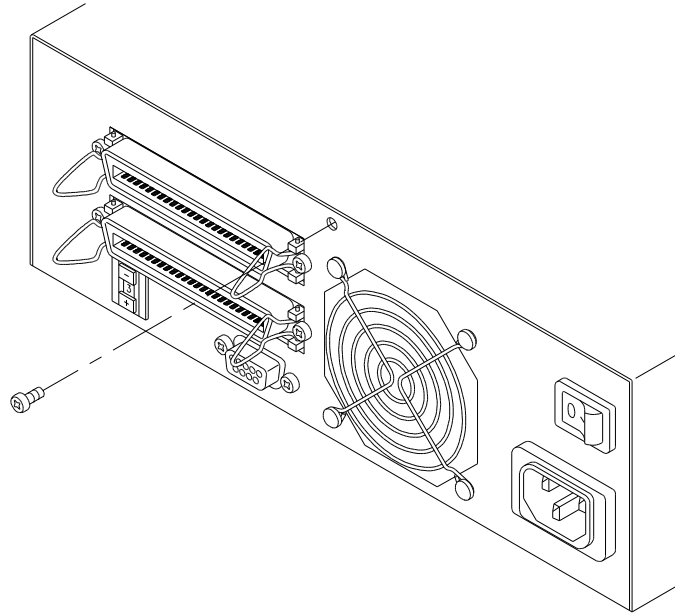
### Before you begin...

- Make sure the current operation has completed and that the tape motion has stopped. The bottom LED will stop blinking when motion has stopped.
- If necessary, unload the data cartridge by pressing the unload button.
- Place a static protection mat on the work surface. Use a 1-megaohm resistor to ground the static protection mat.
- Disconnect the power cord from the Mini Tabletop CTS.
- Make sure there is no activity on the SCSI bus before you disconnect the SCSI cable from the CTS. The middle LED does not blink when there is no SCSI bus activity.

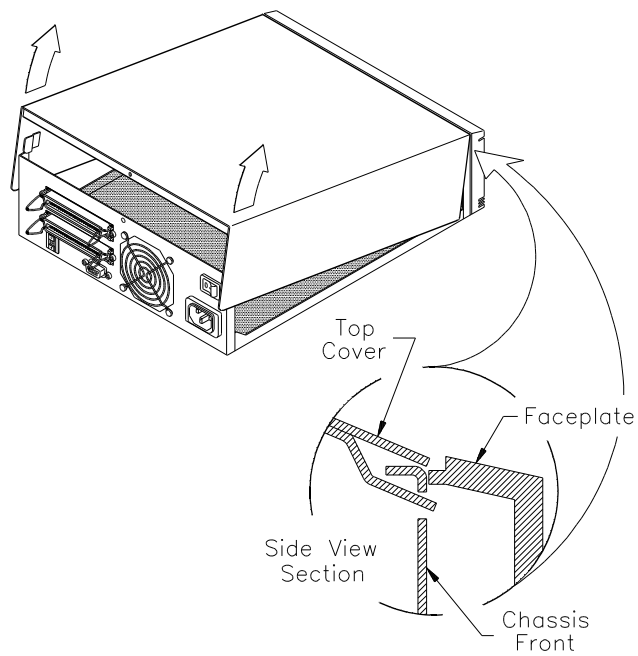
**Note:** If this is the terminating device on the SCSI bus, you must terminate the bus at another device prior to disconnecting the SCSI cable.

**To remove the cover:**

1. Using a #1 Phillips screwdriver, remove the single screw on the rear panel.

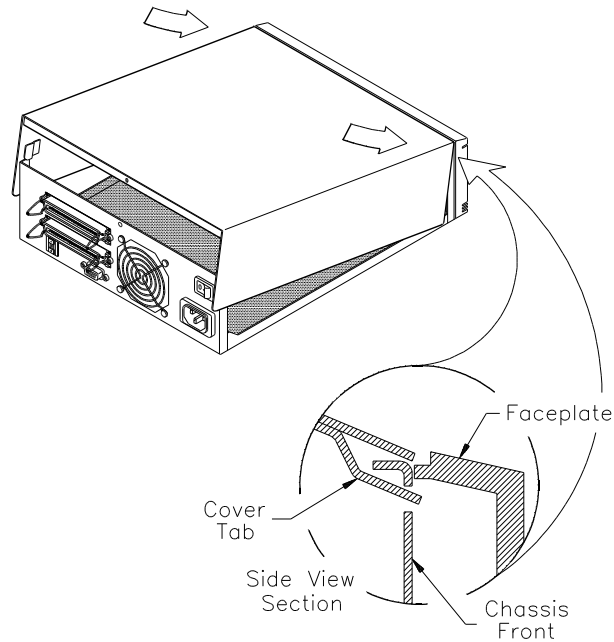


2. Rotate the top cover upward on the front hinge and lift it off the chassis as shown.

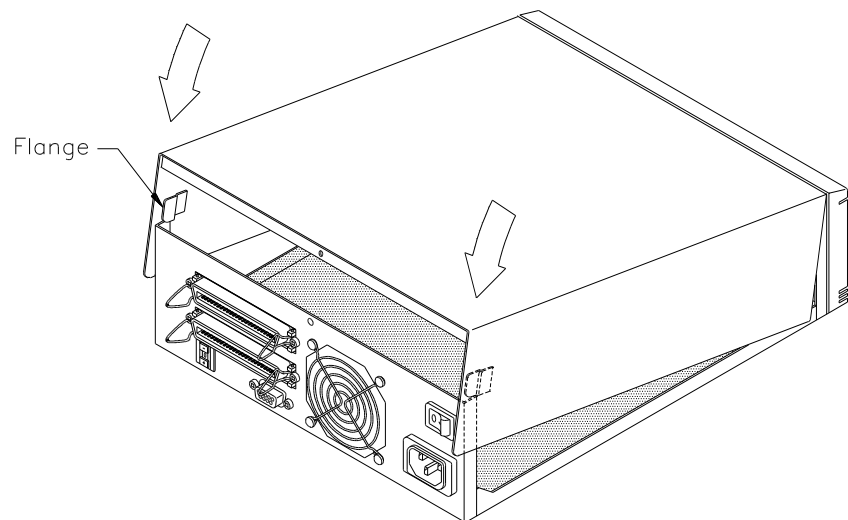


**To replace the cover:**

1. Slide the cover tabs through the chassis slots as shown.



2. Rotate the top cover down and engage the flanges on the interior sides of the cover with the side panels of the Mini Tabletop CTS as shown. You may need to apply minimal pressure on the sides.



3. Using a #1 Phillips screwdriver, replace the screw on the back panel.

**Notes:**

---



# Glossary

- ANSI** American National Standards Institute.
- AWG** American Wire Gauge.
- b** Binary (base 2) numbering system.
- bit** Binary digit; the smallest unit of information in the binary system; a 0 or 1.
- BOT** Beginning of tape.
- BSY** Busy bus condition.
- bus devices** Initiator or target devices connected to the SCSI bus.
- byte** Eight bits or one character.
- C** Celsius (Centigrade).
- CEE** International Commission on Rules for the approval of Electrical Equipment.
- CENELEC** European Committee for Electrotechnical Standardization.
- cm** Centimeter (0.3937 inches).

- connect** The establishment of communications between the initiator and the selected target.
- CSA** Canadian Standards Association.
- CTS** Cartridge Tape Subsystem, such as the EXB-8205 Cartridge Tape Subsystem.
- dB** Decibel.
- differential** A SCSI configuration using two signal lines to transmit a bus signal between devices. A differential configuration can have up to 25 meters (82 feet) of cable along the bus.
- disconnect** The termination of communications between the initiator and the target. During a disconnect, the target releases control of the SCSI bus, allowing the bus to become free.
- EEPROM** Electrically erasable programmable read only memory.
- EPROM** Erasable programmable read only memory.
- EXATAPE™** A data-grade, metal particle, 8mm data cartridge. EXABYTE recommends that you use EXATAPE data cartridges for all EXABYTE 8mm Cartridge Tape Subsystems.
- EXB-8200** The EXB-8200 8mm Cartridge Tape Subsystem. The EXB-8200 is a full-high cartridge tape subsystem that can store up to 2.5 gigabytes of data on a single 8mm data cartridge.
- EXB-8200c format** One of several data formats written and read by the EXB-8205 and EXB-8505. Tapes written in this format can be read only by an EXB-8205, EXB-8505, or EXB-8500c; this format cannot be read by the EXB-8200.
- EXB-8200 format** One of several data formats written and read by the EXB-8205 and EXB-8505. Tapes written in this format can be read by any EXB-8200, EXB-8200SX, EXB-8500, or EXB-8500c.
- EXB-8200SX** The EXB-8200SX 8mm Cartridge Tape Subsystem. The EXB-8200SX is very similar to the EXB-8200 but offers a high-speed search capability.
- EXB-8205** The EXB-8205 8mm Cartridge Tape Subsystem. The EXB-8205 is a half-high 8mm cartridge tape subsystem that can compress logical blocks of user data. Assuming an average 2:1 compression ratio, the EXB-8205 can store 5.0 gigabytes of data on a single 8mm data cartridge.

- EXB-8500** The EXB-8500 8mm Cartridge Tape Subsystem. The EXB-8500 is a full-high cartridge tape subsystem that can store up to 5.0 gigabytes of data on a single 8mm data cartridge.
- EXB-8500c** The EXB-8500c 8mm Cartridge Tape Subsystem. The EXB-8500c is very similar to the EXB-8500, but it can compress logical blocks of user data.
- EXB-8500c format** One of the four data formats written and read by the EXB-8505. Tapes written by the EXB-8505 in this format can also be read by an EXB-8500c.
- EXB-8500 format** One of the four data formats written and read by the EXB-8505. Tapes written by the EXB-8505 in this format can also be read by an EXB-8500 or EXB-8500c.
- EXB-8505** The EXB-8505 8mm Cartridge Tape Subsystem. The EXB-8505 is a half-high 8mm cartridge tape subsystem that can store 10 gigabytes of data on a single EXATAPE 8mm data cartridge, assuming an average 2:1 compression ratio.
- F** Fahrenheit.
- FCC** Federal Communications Commission.
- FRU** Field replaceable unit.
- g** Gravity.
- GByte** Gigabyte; 1,024 MBytes.
- h** Hexadecimal (base 16) numbering system.
- Hz** Hertz.
- ID** Identification.
- IEC** International Electrotechnical Commission.
- initiator** A host computer system that requests an operation to be performed by a target.
- I/O** Input/output.
- KByte** Kilobyte; 1,024 bytes.
- KHz** Kilohertz.
- KV** Kilovolt.
- mA** Milliamp.
- m** Meter.
- MByte** Megabyte; 1,024 KBytes.

<b>MHz</b>	Megahertz.
<b>mm</b>	Millimeter (0.03937 inches).
<b>ms or msec</b>	Millisecond.
<b>MTBF</b>	Mean time between failures.
<b>MTTR</b>	Mean time to repair.
<b>mV</b>	Millivolt.
<b>mVpp</b>	Millivolts peak to peak.
<b>NEMA</b>	National Electrical Manufacturers Association.
<b>ns</b>	Nanosecond.
<b>NSTA</b>	National Safe Transit Association.
<b>POST</b>	Power-on self-test. POST is the process that occurs when the CTS performs its initial power-on diagnostics.
<b>ready</b>	The state of the CTS when it is ready to process commands.
<b>reconnect</b>	The function that occurs when the target arbitrates and reconnects to an initiator after a disconnect.
<b>SCSI</b>	Small Computer System Interface.
<b>SCSI address</b>	The octal representation of the unique address (0 to 7) assigned to a SCSI device. The SCSI address for the CTS is set using the remote connector on the back of the Mini Tabletop CTS.
<b>SCSI ID</b>	The bit significant representation of the SCSI address referring to one of the signal lines.
<b>single-ended</b>	A SCSI configuration using a single signal line to transmit a bus signal between devices. A single-ended configuration can have up to 6 meters (19 feet 8 inches) of cable along the SCSI bus.
<b>target</b>	A bus device (such as a CTS or controller) that performs an operation requested by an initiator.
<b>terminator</b>	The terminating plug required at both ends of the SCSI bus. Terminators can be external or internal.
<b>TUV</b>	Technischer Überwachungs-Verein.
<b>UL</b>	Underwriters Laboratories.
<b>VAC</b>	Volts AC.
<b>VDC</b>	Volts DC.

**VDE** Verband Deutscher Elektrotechniker (German Association of Electrotechnical Engineers).

**μm** Micrometer (0.0003937 inches).

**μs or μsec** Microsecond.

**μV** Microvolt.

**Notes:**

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